The laboratory occupies a low one-storied building on the north side of the Surgeons' Hall. There are four rooms, the largest of which is filled with cases stored with specimens from the Arctic, while another contains specimens from the Antarctic. Each case is devoted to a particular group of animals, crustacea, fishes, molluscs, sea-urchins, &c., systematically arranged, with the memoirs and papers describing them placed on the lower shelf. One interesting case is arranged bathymetrically, the typical animals of different depths being placed on corresponding shelves. In the Antarctic room special cases are devoted to special regions, such as the Weddell Sea, Scotia Bay, &c., or to different islands, the South Orkneys, Gough Island, the Falklands, and so on. One interesting specimen in the collection is a large granite boulder, ice-marked, weighing 3 or 4 cwt., which had been dredged up from a depth of 1775 fathoms in lat. 62° 10′ S. and long. 41° 20′ W. The whole collection, Arctic and Antarctic, represented the gatherings of the scientific work of five vessels, the *Balaena*, the *Windward*, the *Blencathra, Princess Alice II.*, and the *Scotia*. Photographs of these and of interesting scenes during the *Scotia's* voyage decorated the walls. At the present time many of the specimens are in the hands of the naturalists who are working up the various groups, while the larger animals are for the most part distributed throughout Scotland in various museums. There are many duplicates which should prove useful in effecting exchanges with other similar institutions, and so gradually increase the value of the Edinburgh collection.

The inauguration of the Scottish Oceanographical Laboratory was the first of a series of public and semi-public functions at which the Prince of Monaco was the leading figure. On the evening of January 16 he was the principal guest at the dinner of the Royal Society Club. Lord Kelvin presided, and Prof. Geikie acted as vice-chairman. On Thursday, January 17, the Prince received the degree of Doctor of Laws from the University of Edinburgh. On the evening of the same day he delivered an address on the exploration of the high atmosphere before the Royal Scottish Geographical Society. Prof. Geikie, president of the society, occupied the chair, and introduced the Prince as one well known as an enthusiastic, devoted, and successful student of natural science. His investigations had been conducted on a scale which had only been rivalled by Government expeditions sent out by great nations. For at least twenty-five years he had traversed the ocean in search of knowledge. He had established a great oceanographical institute at Monaco, a weather bureau, and a museum, and last year he endowed at Paris an oceanographical institute at a cost of not less than 160,000*l*. The president then handed to the Prince the gold medal which the society had awarded him in recognition of his scientific work.

In the course of his address, the Prince said that in the last few years the improvements in the manufacture of steel had made it possible to fly kites at great heights, carrying self-registering apparatus. Also the india-rubber industry had enabled balloons, carrying self-registering apparatus, to be sent to altitudes hitherto inaccessible. Through the liberality of the German Emperor a great establishment had been set up at Lindenberg for the systematic investigation of the upper-air meteorology. This was over the land. In 1904 the lecturer had become interested in the subject, and he began to make plans for investigating the problem over the sea. To reach great heights it was necessary to attach to the line or wire a series of kites at intervals, and if no layers of calm air were encountered a very great height could be reached, and the kite kept there by the vessel moving with a speed of not less than 7 metres per second. There were many difficulties on board ship due to complications of wind distributions in the different layers. After a season's work with kites in the Atlantic the Prince resolved to try the *ballons-sondes*. The method first adopted was to use two light india-rubber balloons filled with hydrogen. The one carried the self-registering apparatus, while the other and more inflated balloon was attached to it, and aided the ascent to the required height. At this height the upper balloon burst, and the lower balloon with its instruments descended as a parachute, and hovered over the sea so long as the float at the end of the stray line touched the surface of the water. This could be seen at a distance of eight or ten miles. The bursting of the balloon was somewhat indefinite, and an improvement was subsequently effected by means of which the one balloon was released altogether at the desired height. This was done by means of a current from a small dry cell set in action when the pen of the barograph on the lower balloon touched a conductor set at the pressure corresponding to the desired height. Also by use of a formula taken in connection with the observed ascent of the system, the line of descent of the "*ballon parachuté*" could be approximately calculated, and the ship steered for the place. By means of apparatus of this kind pressure and temperature curves had been brought back from a height of 7500 metres in latitude 78°·55. In the high latitudes the experiments had been greatly interfered with by fog. The drift of air in still higher regions had been studied by means of pilot balloons, which had been followed through the telescope of a theodolite to heights of nearly 30,000 metres. These indicated that in latitude 80° north, at a height of about 13,600 metres, there were at times winds blowing with a velocity of 60 metres per second, or 130 miles per hour. The results of several cruises had shown that "if the principal States of the world were willing to diminish a little the expense of international quarrels by submitting them to the judgment of a tribunal less costly than that of war, and if they preserved more resources for the veritable interests of humanity, it would be possible with powerful means very soon to know the laws of meteorology, the key to which seemed to be found in the higher atmospheric regions."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The voting on the proposed reform of the mathematical tripos will take place on Friday and Saturday, February 1 and 2.

The placet executive committee has issued a letter to non-resident members of the Senate pointing out that "the proposed scheme is supported by a large majority of the resident members of the Senate, a majority which includes eight heads of houses, more than thirty professors, all the official university teachers of mathematics, and the whole mathematical staff of several of the larger colleges. Moreover, the principles of the reform have already been approved by the Senate. It is, however, impossible for the reform to be carried into effect unless it is supported by the votes of a large number of non-residents. . . . The rejection of the proposed reform would be a great calamity for the future of the Cambridge School of Mathematics. Further, the precedent established by the reversal of a decision already made would be a serious menace to the practical working of the government of the University."

THE citizens of Montreal resolved at a meeting on January 16 to raise 200,000*l*. for an endowment fund for the McGill University. Mr. Robert Reford promised to contribute 10,000*l*. Lord Grey presided, and Lord Strathcona was also present at the meeting.

A COURSE of eight lectures on "Certain Fundamental Problems in Physiology Common to Animals and Plants," to be given at University College, London, by Dr. W. M. Bayliss, F.R.S., commenced on Wednesday, January 23. The lectures are open to all students of the University of London.

MR. G. P. DARNELL SMITH has been appointed assistant director of technical education and manual training to the Board of Education, Auckland, New Zealand. Mr. Darnell Smith has been on the staff of the Merchant Venturers' Technical College, Bristol, since September, 1892, and some time ago he was promoted to the post of assistant professor of chemistry in the college.

THE Duke of Northumberland on January 17 opened the new Royal Grammar School at Newcastle-upon-Tyne, which has been built by the governors at a cost of 60,000*l*. to take the place of an older building. In his inaugural address the Duke of Northumberland said, with regard to recent elementary education, we have probably over-

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weighted the coach. Small brains have been strained further than they should be; a smattering rather than a real grounding in knowledge, and a "cramming" rather than a forming of character, have been given. He hopes that the revival of the interest in secondary education is a sign that we are going to mend our ways in these directions. My own belief, he continued, is that the proper form for education to take is to teach very few subjects in the elementary schools and to teach them thoroughly. Then, instead of wasting time in making a level of mediocrity, let promising children be taken out of the elementary schools, and, when they are really likely to profit by superior and special instructions, bring them into secondary schools. All the population who show that they are able to profit by the advantages of secondary education should receive it. Some of the money spent on elementary education might be saved and spent on technical education.

PROF. SCHUSTER has offered to the University of Manchester during the next three or four years an annual sum of 350*l.* as the stipend of a reader in mathematical physics. The council and senate have accepted with great gratification Prof. Schuster's generous gift, and the post will be instituted forthwith. The reader will be attached to the department of physics. His primary duty will be the promotion of research in the subject of mathematical physics, but he may also be called upon to give a course of lectures on the subject. Prof. Schuster, in a letter to the Vice-Chancellor, gave his reasons for making his offer, as follows:—"I have been watching for some time with considerable apprehension the growing separation between the subjects of mathematical and experimental physics This separation followed perhaps naturally on the rapid growth and exceptional success of the experimental side during the last twenty years, but it cannot, in my opinion, fail to be detrimental to the further progress of the science. I have been trying in the physics honours school of our university to give equal weight to the two branches of the subject, and the offer I now make is intended to emphasise the close connection which should exist between experimental and theoretical work. I believe that at the present moment the foundation of such a readership as I contemplate would be of advantage to science generally and to our school of physics."

MR. E. B. SARGANT, education adviser to the High Commissioner of South Africa, read a paper at the meeting of the Royal Colonial Institute on January 15 on federal tendencies in education. Among other subjects of educational importance, Mr. Sargant dealt with movements especially characteristic of higher education, such as the unceasing stream of young men of good circumstances which flows from the various parts of Greater Britain through our ancient universities, a movement which, in the case of Oxford, was so powerfully reinforced by the bequest of the late Mr. Rhodes. From the point of view of our larger national character, it is difficult to put too great a value upon the influence exerted by such a circulation of students through the heart of our higher educational system. He then spoke of the need of reproducing this kind of education in the colonies themselves, and said that our great public schools and colleges ought to realise that at no distant date they may themselves be asked to extend into Greater Britain. Mr. Sargant also discussed the federal stimulus in education, of which the London University, in its purely examinational aspect, must be considered to be a first cause, and observed that, from an Imperial point of view, the University of London has centred the thoughts of many of our fellow-subjects in all parts of the British Dominions upon the value of some unity of educational aim, even though it may be only a unity of standard. In the discussion which followed, Sir A. Rücker pointed out that in any dominion of the Crown it is possible for a candidate to test himself in order to see whether he has attained a standard equal to that which is attained by a good English schoolboy or undergraduate.

PROF. RUDOLF TOMBO, jun., of Columbia University, has compiled an interesting set of registration statistics concerning the principal universities of the United States. The statistics are published in the issue of *Science* for December 21, 1906. Comparing the figures for 1906 with those of the preceding year, it is seen that California, Leland Stanford, Johns Hopkins, North-Western, and Columbia universities have all suffered a decrease in attendance. The greatest gains have been made by Pennsylvania, New York, Indiana, Missouri, Syracuse, Virginia, Nebraska, Ohio, Cornell, Illinois, Chicago, and Michigan universities. Harvard and Yale with a few other universities have remained stationary in numbers. Examining the numbers of students taking different faculties, most of the institutions this year show an increase in enrolment in the arts department. This is true, so far as men are concerned, of every institution in the table, with the exception of Johns Hopkins and Wisconsin, though several universities for a number of years have registered continual losses in their arts departments, these losses being in many cases due to corresponding gains in the scientific schools. Prof. Tomba says a reaction has apparently set in in this direction, at least at a number of institutions. At Princeton, for example, the number of arts students has increased from 629 to 758, at Yale from 1323 to 1350, at Columbia from 557 to 606; whereas the number of science students at the same institutions has decreased from 624 to 484 in the case of Princeton, from 1028 to 929 in the case of Yale, and from 566 to 524 in the case of Columbia. At Harvard the discrepancy is even greater. The largest gain in the number of science students has been made by Illinois (from 880 to 1020).

THE *Times* recently published some details of the work done by the London County Council Education Committee in the direction of the proper training of children on the physical side. With regard to hygiene and medical work, the head teachers of the schools are instructed to give attention to such questions as ventilation, the scrubbing of floors, and the inspection of the "offices." Children who come to school dirty are washed, or if further purification is needed they are sent home. Notification is made to the medical officer when any child attends school suffering from an infectious disease or after coming from an infected home. Defective children receive special attention, and lists are made in order that they may be medically inspected. The staff of trained medical nurses now numbers thirty-two. The nurses are constantly at work visiting the schools, where they closely examine the children, confer with the teachers, schedule the unclean and those suffering from skin diseases, and generally continue the work of the teachers in these matters. The education committee has its own medical officer, an assistant, and twenty-three other qualified medical men or women, who give a half or a quarter of their time. These medical officers, if necessary, exclude a child from school, and recommend the temporary closing of the school itself in case of extensive prevalence of infectious disease. In examining the children reported to be defective, if they find that the defect is such as to make it desirable that the child should be remitted to a "special" school, they recommend accordingly. The question of bad teeth is not overlooked. Much care is devoted to cases of defective sight. Care is exercised in seeing that no child's sight is strained, and the number of children who visit the hospitals for treatment is very large. Physical exercises, including all that modern scientific and practical experience can suggest as best fitted for the pupils, form an important part of the curriculum of every school. The exercises are health-giving, and are enjoyed by both boys and girls. Games are also encouraged and even organised by the voluntary efforts of the teachers. Most schools have their athletic clubs, and the Council is now making a new departure by providing playing grounds.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 15, 1906.—"Calcium as an Absorbent of Gases, and its Applications in the production of High Vacua and for Spectroscopic Research." By Frederick **Soddy.** Communicated by Prof. J. Larmor, Sec.R.S.

By means of a special electric furnace, surrounded by a porcelain tube and enclosed within a glass tube, it has been found possible to heat reagents *in vacuo*, in sealed

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